Increasing Antimicrobial Resistance among *Shigella* Isolates in the United States, 1999-2000

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Shigella infects an estimated 450,000 persons annually in the United States resulting in >5,000 hospitalizations. The last national survey of antimicrobial resistance among *Shigella* isolates was in 1986; then, ampicillin and trimethoprim-sulfamethoxazole (TMP-SMX) were recommended for empiric treatment. The National Antimicrobial Resistance Monitoring System (NARMS) for Enteric Bacteria has included Shigella isolates since 1999. Seventeen state and local public health laboratories, serving 103 million persons, forward every tenth Shigella isolate to CDC for susceptibility testing to 17 antimicrobial agents using a broth microdilution method.

In 1999-2000, 820 isolates were tested. Of these, 641 (78%) were *S. sonnei*, 163 (20%) *S. flexneri*, 14 (2%) *S. boydii*, and 2 (0.3%) *S. dysenteriae*. Isolates were from New York City (112; 14%), Massachusetts (106; 13 %), Minnesota (100; 12%), and 14 other sites (502; 61%). *S. sonnei* isolates were from younger persons than *S. flexneri* (median: 21 vs. 7 years). Overall, 642 (78 %) were resistant to ampicillin and 431 (53%) to TMP-SMX; 365 (45%) were resistant to both ampicillin and TMP-SMX. *S. sonnei* and *S. flexneri* were equally resistant to TMP-SMX (54% vs. 47%), ampicillin (80% vs. 79%) and to both (54% vs.47%). Among the 196 (24%) penta-resistant isolates, 166 (85%) were resistant to ampicillin, streptomycin, sulfamethoxazole, tetracycline and TMP-SMX. Regionally, TMP-SMX resistance ranged from 13% in the midwest to 68% in the northeast and west. No isolates were resistant to ceftriaxone or ciprofloxacin. However, 11 (1%) were resistant to nalidixic acid, primarily *S. sonnei* (82%).

Since the last national survey, resistance to ampicillin and TMP-SMX has increased 2- and 8-fold, respectively; these agents may no longer be appropriate for empiric treatment for presumed *Shigella* infections. Continued antimicrobial resistance monitoring is essential to inform effective treatment strategies for patients with *Shigella* infections.

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